

ABSTRACT

Improved fabrication processes for microelectromechanical structures, and unique structures fabricated by the improved processes are disclosed. In its simplest form, the fabrication process is a modification of the known SCREAM process, extended and used in such a way as to produce a combined vertical etch and release RIE process, which may be referred to as a "combination etch".

Fabrication of a single-level micromechanical structure using the process of the present invention includes a novel dry etching process to shape and release suspended single crystal silicon elements, the process combining vertical silicon reactive ion etching (Si-RIE) and release etches to eliminate the need to deposit and pattern silicon dioxide mask layers on the sides of suspended structures and to reduce the mechanical stresses in suspended structures caused by deposited silicon dioxide films.